

REMARKS

Claims 1-5 and 7-18 are all the claims pending in the application.

Claims 1, 3, 4, 5, 7 and 18 are amended for clarification to recite “porous body sheet”.

Entry of the Amendment along with reconsideration and review of the claims on the merits are respectfully requested.

Response to Claim Rejections Under 35 U.S.C. § 103

A. Claims 1-5, 7-13 and 15-18 are rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Marcus et al. (U.S. Patent No. 4,046,190) in view of Eastman (U.S. Patent No. 4,274,479), for the reasons given in the Office Action.

B. Claim 14 is rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over Marcus et al. (U.S. Patent No. 4,046,190) in view of Eastman (U.S. Patent No. 4,274,479) as applied to claims above, and further in view of Del Bagno et al. (U.S. Patent No. 4,489,777), for the reasons given in the Office Action.

Applicants respond as follows.

As previously noted, Applicants clarify that the porous body is a sheet in Claims 1, 3, 4, 5, 7 and 18 as viewed in the Amendment to the Claims, thereby emphasizing the structural distinction over the combination of Marcus and Eastman.

The combination of Marcus and Eastman, as well as the combination of Marcus, Eastman and Del Bagno, is not properly motivated, and, in any case, their combination still fails to achieve Applicants' claimed invention.

Applicants claim a heat pipe having a flat-thin shaped section, a porous body sheet, and a direct reflux flow passage formed between the porous body sheet and an inner face of a container portion of the heat pipe where the porous body sheet is mounted.

The combination of Marcus with Eastman would not be motivated to a skilled artisan at least because the structure of Marcus' heat pipe is very different from that of Eastman. Marcus discloses flat-plate heat pipes with metal wicking distributed between the two main plates. On the other hand, Eastman's heat pipe is structurally circular in form both for the container as well as for the porous wick which is mounted around the inner circumference of the container, thereby creating a defined vapor space within the middle of the container. As Marcus discloses a flat-type heat pipe structure, one skilled in the art would not be motivated to apply elements of Eastman's structurally distinguishable circular heat pipe structure thereto. Thus, a skilled artisan would not be motivated to combine these disclosures to achieve the present invention.

As another example, Marcus explains the necessity and significance for the configuration of the plates and capillary grooves thereon: "Capillary grooves 1 on panel 2 are oriented 90° to capillary grooves 1 on panel 3. This right angle orientation of grooves 1 in combination with metal wicking 5 provides a continuous liquid path from any one groove to any other within the enclosure. This will allow continuous circulation of working fluid between all points of the heat pipe." (see column 2, line 63 to column 3, line 1). Marcus teaches that "[s]urfaces of the plates

facing each other have capillary grooves at right angles to each other; i.e., the capillary grooves in one plate are at right angles to the grooves in the opposing plate so the working fluid can flow in all directions.” (see column 1, lines 49-53). Marcus further teaches that “[m]etal wicking 5 is arranged so that they collective [*sic*] cross or intersect every groove on the face of plates 2 and 3.” (see column 2, lines 20-21 and Figure). Also, Marcus’ Figure displays twisting sections of metal wicking that are spread out between the top and bottom plates where the metal wicking leaves uncovered many portions of the bottom plate.

Thus, Marcus teaches the significance of its specific structure, and elements therein, for forming “a continuous liquid path from any one groove to any other within the enclosure” with the benefit of good capacity and conductive capabilities. However, a skilled artisan would not be motivated to combine or replace Marcus’ metal wick with Eastman’s sintered porous matrix, as doing so would not maintain Marcus’ critical structure for achieving its benefits in accordance with Marcus’ teachings.

Thus, even if the combination of Marcus and Eastman were motivated, which Applicants dispute, their combination still fails to render obvious the present invention.

The Examiner recognizes that Marcus fails to teach a porous body sheet arranged on the bottom face of the container. It is improper for the Examiner to then cite Marcus as disclosing Applicants’ claimed element that “the direct reflux flow passage is formed between the porous body and an inner face of the container where the porous body is mounted.”

Marcus discloses metal wicking that is structurally different from Applicants’ claimed porous body sheet, as Marcus’ metal wicking is not even a porous body in the form of a sheet.

Eastman arguably fails to make up for Marcus' deficiency in this regard as Eastman's sintered porous matrix is arranged circumferentially around the container but not on a bottom face of the container. Eastman's heat pipe embodiments are structurally circular in form with symmetrically spaced longitudinal grooves in the tubular wick along the innermost length of the heat pipe. However, Eastman's grooves are formed on the side of the wick opposite the inner face of the metal cylinder (see Figs. 1-8). Thus, Eastman fails to disclose or teach a direct reflux flow passage formed between the porous body sheet and an inner face of the container where the porous body sheet is mounted, according to the present invention.

Thus, the combination of Marcus with Eastman, and also with Del Bagno, fail to achieve not only the elements of a porous body sheet arranged on the bottom face of the container, but also fail to achieve a direct reflux flow passage formed between the porous body sheet and an inner face of the container where the porous body sheet is mounted.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the obviousness rejections.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No.: 10/777,061

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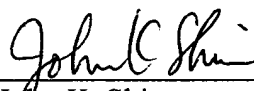
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